Space Weather Forecast

Issued on Wednesday, 25 May 2022 at 01:14 Local

This forecast provides a four day assessment of space weather events. The probabilities stated below are for reaching or exceeding the given levels. For more information about space weather impacts please see the Met Office Space Weather Scales https://www.metoffice.gov.uk/weather/learn-about/space-weather/uk-scales

Space Weather Forecast Headline: Chance of moderate solar activity and R1-R2 radio blackouts. Minor geomagnetic storms possible on 26th or 27th.

Analysis of Space Weather Activity over past 24 hours

Solar Activity: Solar activity has been Low, with only Common-class flares mainly emanating from the two moderately large regions in the northwestern quadrant. A mid-level Common-class flare was observed from the new, unnumbered region that has rotated over the eastern limb in the past 24-hours. Six remaining regions are considered small and benign. No Earth-directed CMEs (Coronal Mass Ejections) have been observed on available imagery.

Solar Wind / Geomagnetic Activity: The solar wind has declined from slightly elevated to background levels through the last 24 hours due to the continued easing of a fast solar wind. Total magnetic field strength has been weak, with the north-south component also varying weakly. Geomagnetic activity has been Quiet.

Energetic Particles / Solar Radiation: No solar radiation storms were observed.

Four-Day Space Weather Forecast Summary

Solar Activity: Solar activity is expected to be mainly Low, but with a chance of Moderate activity and a very slight chance of High activity. This is due to three moderately large and complex regions; two in the northwestern quadrant and one near the eastern limb. Additionally there is the potential for further new complex regions to rotate across the eastern limb in the coming days.

Solar Wind / Geomagnetic Activity: No CMEs are currently forecast at Earth during the period. Solar winds are expected to be at ambient levels through 25th and 26th May. Two coronal hole high speed stream connections late on the 26th and more likely early on 27th May could elevate winds to between 500-550km/s (elevated). Geomagnetic activity is expected to be Quiet on Day 1 and much of Day 2. There is an increasing risk of Active intervals on Day 2, but more likely on early Day 3 (27th May) with a slight chance of G1/Minor Storms. Geomagnetic activity should return to Quiet or Unsettled levels by Day 4 (28th May).

Energetic Particles / Solar Radiation: No solar radiation storms are expected, but with a daily slight chance of flux reaching S1, should any notable flares occur.

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Geomagnetic Storms:

Geo-Magnetic Storm Probability (Exceedance)	Level	Past 24 Hours (Yes/No)	Day 1 (00-24 UTC) (%)	Day 2 (00-24 UTC) (%)	Day 3 (00-24 UTC) (%)	Day 4 (00-24 UTC) (%)
Minor or Moderate	G1 to G2	No	1	10	20	5
Strong	G3	No	1	1	1	1
Severe	G4	No	1	1	1	1
Extreme	G5	No	1	1	1	1

Radio Blackouts - X Ray Flares:

X Ray Flares Probability	Level	Past 24 Hours (Yes/No)	Day 1 (00-24 UTC) (%)	Day 2 (00-24 UTC) (%)	Day 3 (00-24 UTC) (%)	Day 4 (00-24 UTC) (%)
Active	R1-R2 M Class	No	40	40	40	40
Very Active	R3 to R5 X	No	5	5	5	5

Solar Radiation Storms - (High Energy Protons):

Radiation Storms Probability (Exceedance)	Level (cm^{-2} sr^{-1} s^{-1})	Past 24 Hours (Yes/No)	Day 1 (00-24 UTC) (%)	Day 2 (00-24 UTC) (%)	Day 3 (00-24 UTC) (%)	Day 4 (00-24 UTC) (%)
Active	≥ S1	No	10	10	10	10
Very Active	≥ S3 *	No	1	1	1	1

* S3 ≥ 10 MeV ≥ 1000 pfu and / or ≥ 50 MeV ≥ 10 pfu. (pfu = $cm^{-2}sr^{-1}s^{-1}$)

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